

SEQUENCE LISTING

<110> Nicosia, Alfredo  
Lahm, Armin  
Tramontano, Anna  
Cortese, Riccardo

<120> Mimotopes of hypervariable region 1 of the E2  
glycoprotein of HCV and uses thereof

<130> Mewburn

<140> US 09/463,098  
<141> 2000-05-15

<150> PCT/EP99/03344  
<151> 1999-05-14

<150> GB 9810756.8  
<151> 1998-05-19

<160> 199

<170> PatentIn Ver. 2.1

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Xaa Xaa Leu Phe Xaa Xaa Gly Xaa Xaa Gln Xaa  
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Gln Thr His Thr Val Gly Gly Val Gln Gly Arg Gln Ala His Ser Leu  
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Thr Ser Leu Phe Ser Pro Gly Ala Ser Gln Asn  
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Gln Thr Thr Thr Gly Gly Gln Val Ser His Ala Thr His Gly Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Leu Gly Pro Gln Gln Lys  
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1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Pro Ser Gln Asn  
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Gln Thr His Val Val Gly Gly Gln Gln Gly Arg Gln Val Ser Ser Leu  
1 5 10 15

Val Ser Leu Phe Ser Pro Gly Ala Ser Gln Lys  
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peptide

B1  
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Thr Thr His Thr Val Gly Gly Ser Val Ala Arg Gln Val His Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Pro Gln Gln Lys  
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Gln Thr His Thr Val Gly Gly Ser Gln Ala His Ala Ala His Ser Leu  
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Thr Arg Leu Phe Ser Pro Gly Ser Ser Gln Asn  
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Thr Ser Leu Phe Ser Pro Gly Ala Ser Gln Asn  
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Thr Thr Thr Thr Thr Gly Gly Gln Ala Gly His Gln Ala His Ser Leu  
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Thr Ser Leu Phe Ser Pro Gly Ala Ser Gln Lys  
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<210> 12  
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<400> 12

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Thr Ser Leu Phe Ser Pro Gly Ala Ser Gln Lys  
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Thr Ser Leu Phe Ser Pro Gly Pro Ser Gln Asn  
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<210> 14

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<400> 14

Thr Thr Thr Val Val Gly Gly Gln Ala Ala His Gln Thr His Ser Leu  
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Thr Ser Leu Phe Ser Pro Gly Ala Lys Gln Asn  
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<400> 15

Thr Thr Thr Thr Thr Gly Gly Gln Gln Ser His Thr Val His Gly Leu  
1 5 10 15

Val Gly Leu Phe Ser Pro Gly Ser Lys Gln Asn  
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<210> 16  
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peptide

<400> 16  
Gln Thr His Thr Val Gly Gly Val Gln Ala His Thr Val Arg Gly Leu  
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Thr Ser Leu Phe Ser Pro Gly Ser Ser Gln Asn  
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<210> 17  
<211> 27  
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peptide

B1  
<400> 17  
Gln Thr His Thr Thr Gly Gly Gln Ala Gly His Thr Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Pro Gly Ala Lys Gln Asn  
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<210> 18  
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peptide

<400> 18  
Gln Thr Thr Thr Val Gly Gly Val Ala Ser His Gln Ala His Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Pro Gly Ala Lys Gln Lys  
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<210> 19  
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peptide

<400> 19  
Gln Thr His Thr Thr Gly Gly Gln Ala Gly His Gln Ala His Ser Leu  
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Thr Gly Leu Phe Ser Pro Gly Ala Lys Gln Asn  
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<210> 20  
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<400> 20  
Gln Thr His Thr Thr Gly Gly Val Val Gly His Ala Thr Ser Gly Leu  
1 5 10 15

Thr Ser Leu Phe Ser Pro Gly Pro Ser Gln Lys  
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<210> 21  
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B1  
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Thr Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Thr Ser Ser Leu  
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Thr Gly Leu Phe Ser Pro Gly Ser Lys Gln Asn  
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<400> 22  
Gln Thr Thr Thr Thr Gly Gly Val Ala Ser His Ala Ala His Arg Leu  
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Thr Ser Leu Phe Ser Pro Gly Pro Gln Gln Lys  
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<210> 23  
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<223> Description of Artificial Sequence: Synthetic  
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<400> 23  
Gln Thr Thr Thr Thr Gly Gly Ser Ala Ser His Ala Val Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Ser Lys Gln Asn  
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<211> 27  
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<400> 24  
Gln Thr Thr Val Val Gly Gly Ser Ala Gly His Thr Ala Ser Ser Leu  
1 5 10 15

Val Gly Leu Phe Ser Pro Gly Ser Lys Gln Asn  
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<210> 25  
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Thr Thr Thr Thr Val Gly Gly Gln Ala Ser His Thr Thr Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Ser Gln Gln Asn  
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<210> 26  
<211> 27  
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<223> Description of Artificial Sequence: Synthetic  
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<400> 26  
Gln Thr His Thr Thr Gly Gly Gln Ala Ser His Gln Val Ser Ser Leu  
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Val Ser Leu Phe Ser Pro Gly Ala Lys Gln Lys  
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<210> 27  
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<223> Description of Artificial Sequence: Synthetic peptide

<400> 27

Thr Thr Thr Thr Thr Gly Gly Gln Val Gly His Gln Thr Ser Gly Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Ala Gln Gln Asn  
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<210> 28

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<400> 28

Thr Thr His Val Val Gly Gly Ser Ala Ser His Ala Val Arg Gly Leu  
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Thr Ser Leu Phe Ser Pro Gly Ser Ser Gln Asn  
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<211> 26

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 29

Gln Thr Thr Val Thr Gly Gln Ala Ser His Thr Thr Ser Ser Leu Thr  
1 5 10 15

Gly Leu Phe Ser Pro Gly Ala Ser Gln Lys  
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<210> 30

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<212> PRT

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 30

Ala Thr His Ala Thr Gly Gly Gln Ala Ala His Ser Thr His Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Pro Gly Ala Ser Gln Lys  
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Gln Thr His Val Thr Gly Gly Ser Ala Ala His Gln Thr Gly Gly Leu  
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Thr Gly Leu Phe Ser Pro Gly Pro Lys Gln Asn  
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<400> 32  
Gln Thr Thr Val Val Gly Gly Gln Ala Ser His Val Ser Arg Leu Thr  
1 5 10 15  
Gly Leu Phe Ser Pro Gly Ser Ser Gln Lys  
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<211> 23  
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<223> Description of Artificial Sequence: Synthetic peptide

<400> 33  
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1 5 10 15

Ser Leu Phe Ser Pro Gly Ser Ser Gln Asn  
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Gln Gly Gly Val Gln Gly His Thr Thr Ser Ser Leu Val Gly Leu Phe  
1 5 10 15

Ser Pro Gly Ser Gln Gln Asn  
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Thr Thr His Thr Gly Gly Gln Gln Ala His Thr Thr Ser Arg Leu Val  
1 5 10 15

Ser Leu Phe Ser Pro Gly Ala Ser Gln Lys  
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<211> 27  
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Thr Thr Thr Thr Val Gly Gly Gln Ala Ser His Thr Thr Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Ala Ser Gln Lys  
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<210> 38  
<211> 27  
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 1 5 10 15  
 Val Gly Leu Phe Ser Pro Gly Pro Gln Gln Asn  
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<210> 39  
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 <223> Xaa is Ala, Ser or Pro

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 Thr Xaa Leu Phe Ser Xaa Gly Xaa Lys Gln Asn  
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 1 5 10 15

Thr Ser Leu Phe Ser Pro Gly Ala Lys Gln Asn  
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<210> 41  
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<220>  
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1 5 10 15

Thr Ser Leu Phe Ser Pro Gly Ser Lys Gln Asn  
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<211> 27  
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 <400> 42  
Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Pro Gly Pro Lys Gln Asn  
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<223> Description of Artificial Sequence: Synthetic  
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<400> 43  
Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Leu Gly Ala Lys Gln Asn  
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<210> 44  
<211> 27  
<212> PRT  
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<223> Description of Artificial Sequence: Synthetic  
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<400> 44  
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1 5 10 15

Thr Ser Leu Phe Ser Leu Gly Ser Lys Gln Asn  
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<210> 45  
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<212> PRT  
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<223> Description of Artificial Sequence: Synthetic  
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<400> 45  
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1 5 10 15

Thr Ser Leu Phe Ser Leu Gly Pro Lys Gln Asn  
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<210> 46  
<211> 27  
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<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 46  
Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Gln Gly Ala Lys Gln Asn  
20 25

<210> 47  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 47  
Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Gln Gly Ser Lys Gln Asn  
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<210> 48  
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<400> 48

Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25

<210> 49

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 49

Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Ala Lys Gln Asn  
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<210> 50

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 50

Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Ser Lys Gln Asn  
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<210> 51

<211> 27

<212> PRT

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 51

Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
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Thr Gly Leu Phe Ser Pro Gly Pro Lys Gln Asn  
20 25



<210> 52  
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<220>  
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<400> 52  
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1 5 10 15  
Thr Gly Leu Phe Ser Leu Gly Ala Lys Gln Asn  
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<210> 53  
<211> 27  
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<220>  
<223> Description of Artificial Sequence: Synthetic peptide

B1  
<400> 53  
Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Leu Gly Ser Lys Gln Asn  
20 25

<210> 54  
<211> 27  
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<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 54  
Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Leu Gly Pro Lys Gln Asn  
20 25

<210> 55  
<211> 27  
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<400> 55  
Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Gln Gly Ala Lys Gln Asn  
20 25

<210> 56  
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peptide

<400> 56  
Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Gln Gly Ser Lys Gln Asn  
20 25

<210> 57  
<211> 27  
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peptide

B1  
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Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25

<210> 58  
<211> 27  
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<220>  
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<400> 58  
Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Pro Gly Ala Lys Gln Asn  
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<210> 59  
<211> 27  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
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Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Arg Leu Phe Ser Pro Gly Ser Lys Gln Asn  
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peptide

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Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Arg Leu Phe Ser Pro Gly Pro Lys Gln Asn  
20 25

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<211> 27  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 61  
Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Arg Leu Phe Ser Leu Gly Ala Lys Gln Asn  
20 25

<210> 62  
<211> 27  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 62  
Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Arg Leu Phe Ser Leu Gly Ser Lys Gln Asn  
20 25

<210> 63  
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<400> 63

Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Leu Gly Pro Lys Gln Asn  
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<210> 64

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<400> 64

Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Ala Lys Gln Asn  
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<210> 65

<211> 27

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<400> 65

Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Ser Lys Gln Asn  
20 25

<210> 66

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 66

Gln Thr His Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25

<210> 67  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 67  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Pro Gly Ala Lys Gln Asn  
20 25

<210> 68  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

b1  
<400> 68  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Pro Gly Ser Lys Gln Asn  
20 25

<210> 69  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 69  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Pro Gly Pro Lys Gln Asn  
20 25

<210> 70  
<211> 27  
<212> PRT  
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<220>  
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peptide

<400> 70  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Leu Gly Ala Lys Gln Asn  
20 25

<210> 71  
<211> 27  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 71  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Leu Gly Ser Lys Gln Asn  
20 25

<210> 72  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 72  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Leu Gly Pro Lys Gln Asn  
20 25

<210> 73  
<211> 27  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 73  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Gln Gly Ala Lys Gln Asn  
20 25

<210> 74  
<211> 27  
<212> PRT  
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<220>  
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peptide

<400> 74  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Gln Gly Ser Lys Gln Asn  
20 25

<210> 75  
<211> 27  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 75  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25

<210> 76  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 76  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Pro Gly Ala Lys Gln Asn  
20 25

<210> 77  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 77  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Pro Gly Ser Lys Gln Asn  
20 25

<210> 78  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 78

Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Pro Lys Gln Asn  
20 25

<210> 79

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 79

Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Leu Gly Ala Lys Gln Asn  
20 25

<210> 80

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 80

Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Leu Gly Ser Lys Gln Asn  
20 25

<210> 81

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 81

Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Leu Gly Pro Lys Gln Asn  
20 25



<210> 82  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 82  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Gln Gly Ala Lys Gln Asn  
20 25

<210> 83  
<211> 27  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 83  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Gln Gly Ser Lys Gln Asn  
20 25

<210> 84  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 84  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25

<210> 85  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 85  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Pro Gly Ala Lys Gln Asn  
20 25

<210> 86  
<211> 27  
<212> PRT  
<213> Artificial Sequence


<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 86  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Pro Gly Ser Lys Gln Asn  
20 25

<210> 87  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

 <400> 87  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Pro Gly Pro Lys Gln Asn  
20 25

<210> 88  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 88  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Leu Gly Ala Lys Gln Asn  
20 25

<210> 89  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 89  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Leu Gly Ser Lys Gln Asn  
20 25

<210> 90  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 90  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Leu Gly Pro Lys Gln Asn  
20 25

<210> 91  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

B1  
<400> 91  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Ala Lys Gln Asn  
20 25

<210> 92  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 92  
Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Ser Lys Gln Asn  
20 25

<210> 93  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 93

Gln Thr His Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25

<210> 94

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 94

Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Pro Gly Ala Lys Gln Asn  
20 25

<210> 95

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 95

Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Pro Gly Ser Lys Gln Asn  
20 25

<210> 96

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 96

Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Pro Gly Pro Lys Gln Asn  
20 25

<210> 97  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 97  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Leu Gly Ala Lys Gln Asn  
20 25

<210> 98  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 98  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Leu Gly Ser Lys Gln Asn  
20 25

<210> 99  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 99  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Leu Gly Pro Lys Gln Asn  
20 25

<210> 100  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 100  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Gln Gly Ala Lys Gln Asn  
20 25

<210> 101  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 101  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Gln Gly Ser Lys Gln Asn  
20 25

<210> 102  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

B/ <400> 102  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25

<210> 103  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 103  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Ala Lys Gln Asn  
20 25

<210> 104  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 104  
 Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
 1 5 10 15  
 Thr Gly Leu Phe Ser Pro Gly Ser Lys Gln Asn  
 20 25

<210> 105  
 <211> 27  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 105  
 Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
 1 5 10 15  
 Thr Gly Leu Phe Ser Pro Gly Pro Lys Gln Asn  
 20 25

<210> 106  
 <211> 27  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 106  
 Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
 1 5 10 15  
 Thr Gly Leu Phe Ser Leu Gly Ala Lys Gln Asn  
 20 25

<210> 107  
 <211> 27  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 107  
 Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
 1 5 10 15  
 Thr Gly Leu Phe Ser Leu Gly Ser Lys Gln Asn  
 20 25

<210> 108  
 <211> 27  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 108

Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Leu Gly Pro Lys Gln Asn  
20 25

<210> 109

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 109

Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Gln Gly Ala Lys Gln Asn  
20 25

<210> 110

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 110

Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Gln Gly Ser Lys Gln Asn  
20 25

<210> 111

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 111

Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25



<210> 112  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 112  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Arg Leu Phe Ser Pro Gly Ala Lys Gln Asn  
20 25

<210> 113  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

B1  
<400> 113  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Arg Leu Phe Ser Pro Gly Ser Lys Gln Asn  
20 25

<210> 114  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 114  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Arg Leu Phe Ser Pro Gly Pro Lys Gln Asn  
20 25

<210> 115  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 115  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Leu Gly Ala Lys Gln Asn  
20 25

<210> 116  
<211> 27  
<212> PRT  
<213> Artificial Sequence


<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 116  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Leu Gly Ser Lys Gln Asn  
20 25

<210> 117  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

 <400> 117  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Leu Gly Pro Lys Gln Asn  
20 25

<210> 118  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 118  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Ala Lys Gln Asn  
20 25

<210> 119  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 119  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Ser Lys Gln Asn  
20 25

<210> 120  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 120  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser His Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25

<210> 121  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 121  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Pro Gly Ala Lys Gln Asn  
20 25

<210> 122  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 122  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Ser Leu Phe Ser Pro Gly Ser Lys Gln Asn  
20 25

<210> 123  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 123  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Pro Gly Pro Lys Gln Asn  
20 25

<210> 124  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 124  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Leu Gly Ala Lys Gln Asn  
20 25

<210> 125  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 125  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Leu Gly Ser Lys Gln Asn  
20 25

<210> 126  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 126  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Leu Gly Pro Lys Gln Asn  
20 25

<210> 127  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 127  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Gln Gly Ala Lys Gln Asn  
20 25

<210> 128  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 128  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Gln Gly Ser Lys Gln Asn  
20 25

<210> 129  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 129  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25

<210> 130  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 130  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Ala Lys Gln Asn  
20 25

<210> 131  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 131  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Ser Lys Gln Asn  
20 25

<210> 132  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 132  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Pro Gly Pro Lys Gln Asn  
20 25

<210> 133  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 133  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Leu Gly Ala Lys Gln Asn  
20 25

<210> 134  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 134  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Leu Gly Ser Lys Gln Asn  
20 25

<210> 135  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 135  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Leu Gly Pro Lys Gln Asn  
20 25

<210> 136  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

B1  
<400> 136  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Gln Gly Ala Lys Gln Asn  
20 25

<210> 137  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 137  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Ser Gln Gly Ser Lys Gln Asn  
20 25

<210> 138  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 138

Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Gly Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25

<210> 139

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 139

Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Pro Gly Ala Lys Gln Asn  
20 25

<210> 140

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 140

Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Pro Gly Ser Lys Gln Asn  
20 25

<210> 141

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 141

Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Pro Gly Pro Lys Gln Asn  
20 25



<210> 142  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 142  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Arg Leu Phe Ser Leu Gly Ala Lys Gln Asn  
20 25

<210> 143  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 143  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Arg Leu Phe Ser Leu Gly Ser Lys Gln Asn  
20 25

<210> 144  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 144  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15  
Thr Arg Leu Phe Ser Leu Gly Pro Lys Gln Asn  
20 25

<210> 145  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 145  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Ala Lys Gln Asn  
20 25

<210> 146  
<211> 27  
<212> PRT  
<213> Artificial Sequence


<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 146  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Ser Lys Gln Asn  
20 25

<210> 147  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

 <400> 147  
Gln Thr Thr Thr Val Gly Gly Gln Ala Ser Arg Gln Ala Ser Ser Leu  
1 5 10 15

Thr Arg Leu Phe Ser Gln Gly Pro Lys Gln Asn  
20 25

<210> 148  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> SITE  
<222> (1)  
<223> Xaa is Gln or Thr

<220>  
<221> SITE  
<222> (3)  
<223> Xaa is His or Thr

<220>  
<221> SITE  
<222> (4)  
<223> Xaa is Thr or Val

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<220>

bl

<221> SITE  
<222> (5)  
<223> Xaa is Val or Thr

<220>  
<221> SITE  
<222> (8)  
<223> Xaa is Gln, Ser or Val

<220>  
<221> SITE  
<222> (9)  
<223> Xaa is Ala, Gln or Val

<220>  
<221> SITE  
<222> (10)  
<223> Xaa is Ser, Gly or Ala

<220>  
<221> SITE  
<222> (12)  
<223> Xaa is Gln, Ala or Thr

<220>  
<221> SITE  
<222> (13)  
<223> Xaa is Ala, Thr or Val

<220>  
<221> SITE  
<222> (14)  
<223> Xaa is Ser, His or Arg

<220>  
<221> SITE  
<222> (15)  
<223> Xaa is Ser, Gly or Arg

<220>  
<221> SITE  
<222> (17)  
<223> Xaa is Thr or Val

<220>  
<221> SITE  
<222> (18)  
<223> Xaa is Ser or Gly

<220>  
<221> SITE  
<222> (24)  
<223> Xaa is Ala, Ser or Pro

<220>  
<221> SITE  
<222> (25)  
<223> Xaa is Lys, Ser or Gln

<220>  
<221> SITE  
<222> (27)  
<223> Xaa is Asn or Lys

<400> 148  
Xaa Thr Xaa Xaa Xaa Gly Gly Xaa Xaa Xaa His Xaa Xaa Xaa Xaa Leu  
1 5 10 15

Xaa Xaa Leu Phe Ser Pro Gly Xaa Xaa Gln Xaa  
20 25

<210> 149  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 149  
Thr Thr Thr Thr Thr Gly Gly Val Gln Gly His Thr Thr Arg Gly Leu  
1 5 10 15

Val Arg Leu Phe Ser Leu Gly Ser Lys Gln Asn  
20 25

<210> 150  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

B1  
<400> 150  
Gln Thr Arg Thr Val Gly Gly Gln Met Gly His Gly Val Arg Gly Leu  
1 5 10 15

Thr Ser Leu Phe Ser Ala Gly Ser Ala Arg Asn  
20 25

<210> 151  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 151  
Ser Thr His Val Thr Gly Ala Leu Gln Gly Arg Ala Ala Tyr Gly Ile  
1 5 10 15

Thr Ser Phe Leu Ser His Gly Pro Ser Gln Lys  
20 25

<210> 152  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 152  
His Thr Arg Val Thr Gly Gly Val Gln Gly His Val Thr Ser Thr Leu  
1 5 10 15

Thr Ser Leu Phe Arg Pro Gly Ala Ser Gln Lys  
20 25


<210> 153  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 153  
Glu Thr His Thr Ser Gly Gly Ser Val Ala Arg Ala Ala Phe Gly Leu  
1 5 10 15  
Thr Ser Ile Phe Ser Pro Gly Ala Lys Gln Asn  
20 25

<210> 154  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 154  
Glu Thr His Val Thr Gly Gly Ser Ala Gly Arg Thr Thr Ala Gly Leu  
1 5 10 15  
Val Gly Leu Leu Thr Pro Gly Ala Lys Gln Asn  
20 25

<210> 155  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

 <400> 155  
Ala Thr Tyr Thr Thr Gly Gly Ser Ala Ala Lys Thr Ala His Arg Leu  
1 5 10 15  
Ala Ser Phe Phe Thr Val Gly Pro Lys Gln Asp  
20 25

<210> 156  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 156  
Asp Thr His Val Val Gly Gly Ala Thr Glu Arg Thr Ala Tyr Ser Leu  
1 5 10 15  
Thr Gly Leu Phe Thr Ala Gly Pro Lys Gln Asn  
20 25

<210> 157  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 157  
Gly Thr Thr Cys Gln Gly Gly Val Tyr Ala Arg Gly Ala Gly Gly Ile  
1 5 10 15  
Ala Ser Leu Phe Ser Val Gly Ala Asn Gln Lys  
20 25

<210> 158  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 158  
Arg Thr Leu Ser Phe Gly Gly Leu Pro Gly His Thr Thr His Gly Phe  
1 5 10 15  
Ala Ser Leu Ser Ala Pro Gly Ala Lys Gln Asn  
20 25

<210> 159  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 159  
Arg Thr Ile Leu Met Ala Gly Arg Gln Ala Glu Val Thr Gln Ser Phe  
1 5 10 15  
Pro Gly Leu Phe Ser Leu Ala Pro Ser Gln Lys  
20 25

<210> 160  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

31  
<400> 160  
Asn Thr His Ala Met Gly Gly Val Val Ala Arg Ser Ala Tyr Arg Ile  
1 5 10 15  
Thr Ser Phe Leu Ser Pro Gly Ala Ala Gln Asn  
20 25

<210> 161  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 161  
Ser Thr Arg Ile Thr Gly Gly Ser Met Ala Arg Asp Val Tyr Arg Phe  
1 5 10 15  
Thr Gly Phe Phe Ala Arg Gly Pro Ser Gln Asn  
20 25

<210> 162  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 162  
Gly Thr His Thr Ile Gly Gly Ser Gln Ala Gln Gln Ala Asn Arg Phe  
1 5 10 15  
Val Ser Met Phe Ser Arg Gly Pro Ser Gln Lys  
20 25

<210> 163  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 163  
Asn Thr Tyr Val Thr Gly Gly Ala Ala Ala Arg Gly Ala Ser Gly Ile  
1 5 10 15  
Thr Ser Leu Phe Ser Arg Gly Pro Ser Gln Lys  
20 25

<210> 164  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 164  
Asn Thr Tyr Ala Ser Gly Gly Ala Val Gly His Gln Thr Ala Ser Phe  
1 5 10 15  
Val Arg Leu Leu Ala Pro Gly Pro Gln Gln Asn  
20 25

<210> 165  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

31  
<400> 165  
Glu Thr His Thr Thr Gly Gly Glu Ala Ala Arg Thr Thr Leu Gly Ile  
1 5 10 15  
Ala Ser Leu Phe Thr Ser Gly Ala Asn Gln Lys  
20 25

<210> 166  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 166  
Glu Thr His Thr Thr Gly Gly Ser Ala Ala Arg Ala Thr Phe Gly Ile  
1 5 10 15  
Ala Asn Phe Phe Thr Pro Gly Ala Lys Gln Asn  
20 25

<210> 167  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 167  
Glu Thr Tyr Thr Ser Gly Gly Ser Ala Ala His Thr Thr Ser Gly Phe  
1 5 10 15  
Val Ser Phe Phe Ser Pro Gly Ala Lys Gln Asn  
20 25


<210> 168  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 168  
Gly Thr Thr Arg Val Gly Gly Ala Ala Ala Arg Thr Thr Ser Ser Phe  
1 5 10 15  
Ala Ser Leu Leu Thr His Gly Pro Ser Gln Asn  
20 25

<210> 169  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 169  
Asn Thr His Thr Val Gly Ala Ala Ala Ser Arg Ser Thr Ala Gly Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Ile Gly Arg Ser Gln Lys  
20 25

<210> 170  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

 <400> 170  
Asn Thr Arg Val Thr Gly Gly Val Gln Ser Arg Thr Thr Gly Thr Phe  
1 5 10 15  
Val Gly Leu Phe Thr Pro Gly Pro Ser Gln Arg  
20 25

<210> 171  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 171  
Asn Thr His Val Ser Gly Gly Arg Val Gly His Thr Thr Arg Ser Leu  
1 5 10 15  
Thr Ser Phe Phe Thr Pro Gly Pro Gln Gln Lys  
20 25

<210> 172  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 172  
Ser Thr Arg Val Ser Gly Gly Gln Gln Gly Arg Ala Ala His Ser Leu  
1 5 10 15  
Thr Ser Leu Phe Thr Leu Gly Ala Ser Gln Asn  
20 25



<210> 173  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 173  
Ser Thr Arg Ile Thr Ala Gln Ala Glu Gly Arg Gly Ala Ser Thr Leu  
1 5 10 15  
Thr Ser Leu Phe Thr Ser Gly Ala Ser Gln Lys  
20 25

<210> 174  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 174  
Ser Thr Ile Val Ser Gly Gly Thr Val Ala Arg Thr Thr His Ser Leu  
1 5 10 15  
Ala Ser Leu Phe Thr Gln Gly Ala Ser Gln Lys  
20 25

<210> 175  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 175  
Glu Thr Arg Val Thr Gly Gly Ala Ala Gly His Thr Ala Phe Gly Phe  
1 5 10 15  
Ala Ser Phe Leu Ala Pro Gly Ala Lys Gln Lys  
20 25

<210> 176  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 176  
Asn Thr Tyr Val Thr Gly Gly Ser Ala Gly Arg Ala Val Ala Gly Phe  
1 5 10 15  
Ala Gly Leu Leu Gln Pro Gly Ala Lys Gln Asn  
20 25

<210> 177  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 177  
Glu Thr His Ser Val Gly Gly Ser Ala Ala His Thr Thr Ser Arg Phe  
1 5 10 15  
Thr Ser Leu Phe Ser Pro Gly Pro Gln Gln Asn  
20 25

<210> 178  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 178  
Glu Thr His Val Thr Gly Gly Ser Ala Ala Ser Thr Thr Ser Thr Leu  
1 5 10 15  
Thr Lys Leu Phe Met Pro Gly Ala Ser Gln Asn  
20 25

<210> 179  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 179  
Gln Thr Arg Thr Val Gly Gly Ala Asn Ala Arg Asn Thr Tyr Gly Leu  
1 5 10 15  
Thr Thr Leu Phe Thr Thr Gly Pro Lys Gln Asn  
20 25

<210> 180  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

31  
<400> 180  
Gly Thr Thr Thr Val Gly Ser Ala Val Ser Ser Thr Thr Tyr Arg Phe  
1 5 10 15  
Ala Gly Met Phe Ser Gln Gly Ala Gln Gln Asn  
20 25

<210> 181  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 181  
Asn Thr His Thr Val Gly Gly Thr Glu Gly Phe Ala Thr Gln Arg Leu  
1 5 10 15  
Thr Ser Leu Phe Ala Leu Gly Pro Ser Gln Lys  
20 25

<210> 182  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 182  
Asn Thr His Val Thr Gly Gly Val Val Ala Arg Asn Ala Tyr Arg Ile  
1 5 10 15  
Thr Thr Phe Leu Asn Pro Gly Pro Ala Gln Asn  
20 25

<210> 183  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 183  
His Thr Tyr Thr Thr Gly Gly Thr Ala Ser Arg His Thr Gln Ala Phe  
1 5 10 15  
Ala Gly Leu Phe Asp Ile Gly Pro Gln Gln Lys  
20 25

<210> 184  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 184  
Lys Thr His Val Thr Gly Met Val Ala Gly Lys Asn Ala His Thr Leu  
1 5 10 15  
Ser Ser Ile Phe Thr Ser Gly Pro Ser Gln Asn  
20 25

<210> 185  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

B1  
<400> 185  
Gly Thr His Val Thr Gly Gly Lys Val Ala Tyr Thr Thr Gln Gly Phe  
1 5 10 15  
Thr Ser Phe Phe Ser Arg Gly Pro Ser Gln Lys  
20 25

<210> 186  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 186  
Glu Thr Tyr Thr Ser Gly Gly Asn Ala Gly His Thr Met Thr Gly Ile  
1 5 10 15  
Val Arg Phe Phe Ala Pro Gly Pro Lys Gln Asn  
20 25

<210> 187  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 187  
Ser Thr Tyr Ser Met Gly Gly Ala Ala Ala His Asn Ala Arg Gly Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Ser Gly Ala Ser Gln Arg  
20 25

<210> 188  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 188  
Glu Thr His Val Thr Gly Gly Ser Ala Gly Arg Ser Val Leu Gly Ile  
1 5 10 15  
Ala Ser Phe Leu Thr Arg Gly Pro Lys Gln Asn  
20 25

<210> 189  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 189  
Glu Thr Tyr Ile Ile Gly Ala Ala Thr Gly Arg Thr Thr Ala Gly Leu  
1 5 10 15  
Thr Ser Leu Phe Ser Ser Gly Ser Gln Gln Asn  
20 25

<210> 190  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

B1  
<400> 190  
Glu Thr His Val Thr Gly Gly Asn Ala Gly Arg Thr Thr Ala Gly Leu  
1 5 10 15  
Val Gly Leu Leu Thr Pro Gly Ala Lys Gln Asn  
20 25

<210> 191  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 191  
Glu Thr His Val Thr Gly Gly Ser Ala Gly His Thr Ala Ala Gly Ile  
1 5 10 15  
Ala Ser Phe Phe Ala Pro Gly Pro Lys Gln Asn  
20 25

<210> 192  
<211> 27  
<212> PRT  
<213> Hepatitis C virus

<400> 192  
Asn Thr Arg Val Thr Gly Gly Val Gln Ser His Thr Thr Arg Gly Phe  
1 5 10 15  
Val Gly Met Phe Ser Leu Gly Pro Ser Gln Arg  
20 25

<210> 193  
 <211> 35  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Primer  
  
 <400> 193  
 gcgagatctt aattaacgat atccagctta taaac 35

<210> 194  
 <211> 36  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Primer  
  
 <400> 194  
 tccggatcct tagtggtggt ggtggtggtg cggtag 36

<210> 195  
 <211> 18  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Primer  
  
 <400> 195  
 ggcggccggt taattaac 18

<210> 196  
 <211> 32  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Primer  
  
 <400> 196  
 gcgagatctt aattaaccag acccatacca cc 32

<210> 197  
 <211> 45  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Primer  
  
 <400> 197  
 tccggatcct tagtggtggt ggtggtggtg gttctgtttc gcgcc 45

<210> 198  
<211> 6  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> SITE  
<222> (1)  
<223> Xaa is Ser, Gly, Ala, Asp, Lys, Arg or Thr

<220>  
<221> SITE  
<222> (2)  
<223> Xaa is Leu, Phe, Ile, Met or Trp

<220>  
<221> SITE  
<222> (3)  
<223> Xaa is Phe or Leu

<220>  
<221> SITE  
<222> (4)..(5)  
<223> Xaa is any amino acid

<220>  
<221> SITE  
<222> (6)  
<223> Xaa is Gly or Ala

<220>  
<223> Description of Artificial Sequence: Consensus  
sequence

<400> 198  
Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

<210> 199  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> SITE  
<222> (1)  
<223> Xaa is Ser, Gly, Ala, Asp, Lys, Arg or Thr

<220>  
<221> SITE  
<222> (2)  
<223> Xaa is Leu, Phe, Ile, Met or Trp

<220>  
<221> SITE  
<222> (3)  
<223> Xaa is Phe or Leu

<220>  
<221> SITE  
<222> (4)..(5)  
<223> Xaa is any amino acid



<220>  
<221> SITE  
<222> (6)  
<223> Xaa is Gly or Ala

<220>  
<221> SITE  
<222> (7)  
<223> Xaa is Ala, Pro or Ser

<220>  
<223> Description of Artificial Sequence: Consensus  
sequence

<400> 199  
Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

*Bl  
only*